

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1 1. (Currently amended) A method for facilitating validation of data
2 retrieved from a secondary storage device, comprising:
3 receiving a write request to write new data to a block of the secondary
4 storage device;
5 calculating a new checksum value from the new data;
6 retrieving two previously stored checksum values, including a current
7 checksum value and an old checksum value associated with the block of the
8 secondary storage device, wherein the current checksum value relates to data that
9 is supposed to be currently stored in the block and the old checksum value relates
10 to data that was previously stored in the block, and wherein the current checksum
11 value and the old checksum value are used to determine if the data that is
12 supposed to be currently stored in the block device was actually stored;
13 performing a checksum write operation to a validation device to ~~update~~
14 write both the current checksum value and the old checksum value to the
15 validation device; and
16 performing a data write operation to the secondary storage device to write
17 the new data to the block of the secondary storage device.

- 1 2. (Original) The method of claim 1, wherein if the current checksum
2 value is invalid, which indicates that the current checksum value has not been
3 written to, and the old checksum value is similarly invalid, performing the

4 checksum write operation involves updating the current checksum value to be the
5 new checksum value.

1 3. (Original) The method of claim 1, wherein if the current checksum
2 value is valid and the old checksum value is invalid, performing the checksum
3 write operation involves updating the old checksum value to be the current
4 checksum value, and updating the current checksum value to be the new
5 checksum value.

1 4. (Original) The method of claim 1, wherein if the current checksum
2 value is valid and the old checksum value is valid, performing the checksum write
3 operation involves updating the old checksum value to match data that is presently
4 stored in the block on the secondary storage device, and updating the current
5 checksum value to be the new checksum value.

1 5. (Original) The method of claim 4, wherein updating the old checksum
2 value to match data that is presently stored in the block involves:
3 determining whether the current checksum value or the old checksum
4 value matches data that is presently stored in the block on the secondary storage
5 device; and
6 using the matching value to update the old checksum value.

1 6. (Original) The method of claim 1, further comprising:
2 receiving a read request to read a second block of data from the secondary
3 storage device;
4 performing a data read operation to read the second block of data from the
5 secondary storage device;
6 calculating a checksum value from the second block of data;

7 performing a checksum read operation to read an existing checksum value
8 for the second block of data from the validation device;
9 comparing the calculated checksum value with the existing checksum
10 value; and
11 indicating an error condition if the calculated checksum value does not
12 match the existing checksum value.

1 7. (Original) The method of claim 1, wherein the secondary storage device
2 is a disk drive.

1 8. (Original) The method of claim 1, wherein the validation device is
2 separate from the secondary storage device.

1 9. (Original) The method of claim 1, wherein the validation device and the
2 secondary storage device are the same device.

1 10. (Currently amended) A method for facilitating validation of data
2 retrieved from a disk, comprising:
3 receiving a write request to write new data to a block of the disk;
4 calculating a new checksum value from the new data;
5 retrieving two previously stored checksum values, including a current
6 checksum value and an old checksum value associated with the block of the disk,
7 wherein the current checksum value relates to data that is supposed to be currently
8 stored in the block and the old checksum value relates to data that was previously
9 stored in the block, and wherein the current checksum value and the old checksum
10 value are used to determine if the data that is supposed to be currently stored in
11 the block device was actually stored;

12 performing a checksum write operation to a validation device to update
13 write both the current checksum value and the old checksum value to the
14 validation device;
15 wherein if the current checksum value is invalid, which indicates that the
16 current checksum value has not been written to, and the old checksum value is
17 similarly invalid, performing the checksum write operation involves updating the
18 current checksum value to be the new checksum value;
19 wherein if the current checksum value is valid and the old checksum value
20 is invalid, performing the checksum write operation involves updating the old
21 checksum value to be the current checksum value, and updating the current
22 checksum value to be the new checksum value;
23 wherein if the current checksum value is valid and the old checksum value
24 is valid, performing the checksum write operation involves updating the old
25 checksum value to match data that is presently stored in the block on the disk, and
26 updating the current checksum value to be the new checksum value; and
27 performing a data write operation to the disk to write the new data to the
28 block of the disk.

1 11. (Currently amended) A computer-readable storage medium storing
2 instructions that when executed by a computer cause the computer to perform a
3 method for facilitating validation of data retrieved from a secondary storage
4 device, the method comprising:
5 receiving a write request to write new data to a block of the secondary
6 storage device;
7 calculating a new checksum value from the new data;
8 retrieving two previously stored checksum values, includi a current
9 checksum value and an old checksum value associated with the block of the
10 secondary storage device, wherein the current checksum value relates to data that

11 is supposed to be currently stored in the block and the old checksum value relates
12 to data that was previously stored in the block, and wherein the current checksum
13 value and the old checksum value are used to determine if the data that is
14 supposed to be currently stored in the block device was actually stored;
15 performing a checksum write operation to a validation device to ~~update~~
16 write both the current checksum value and the old checksum value to the
17 validation device; and
18 performing a data write operation to the secondary storage device to write
19 the new data to the block of the secondary storage device.

1 12. (Original) The computer-readable storage medium of claim 11,
2 wherein if the current checksum value is invalid, which indicates that the current
3 checksum value has not been written to, and the old checksum value is similarly
4 invalid, performing the checksum write operation involves updating the current
5 checksum value to be the new checksum value.

1 13. (Original) The computer-readable storage medium of claim 11,
2 wherein if the current checksum value is valid and the old checksum value is
3 invalid, performing the checksum write operation involves updating the old
4 checksum value to be the current checksum value and updating the current
5 checksum value to be the new checksum value.

1 14. (Original) The computer-readable storage medium of claim 11,
2 wherein if the current checksum value is valid and the old checksum value is
3 valid, performing the checksum write operation involves updating the old
4 checksum value to match data that is presently stored in the block on the
5 secondary storage device, and updating the current checksum value to be the new
6 checksum value.

1 15. (Original) The computer-readable storage medium of claim 14,
2 wherein updating the old checksum value to match data that is presently stored in
3 the block involves:
4 determining whether the current checksum value or the old checksum
5 value matches data that is presently stored in the block on the secondary storage
6 device; and
7 using the matching value to update the old checksum value.

1 16. (Original) The computer-readable storage medium of claim 11,
2 wherein the method further comprises:
3 receiving a read request to read a second block of data from the secondary
4 storage device;
5 performing a data read operation to read the second block of data from the
6 secondary storage device;
7 calculating a checksum value from the second block of data;
8 performing a checksum read operation to read an existing checksum value
9 for the second block of data from the validation device;
10 comparing the calculated checksum value with the existing checksum
11 value; and
12 indicating an error condition if the calculated checksum value does not
13 match the existing checksum value.

1 17. (Original) The computer-readable storage medium of claim 11,
2 wherein the secondary storage device is a disk drive.

1 18. (Original) The computer-readable storage medium of claim 11,
2 wherein the validation device is separate from the secondary storage device.

1 19. (Original) The computer-readable storage medium of claim 11,
2 wherein the validation device and the secondary storage device are the same
3 device.

1 20. (Currently amended) An apparatus that facilitates validation of data
2 retrieved from a secondary storage device, comprising:
3 a receiving mechanism that is configured to receive a write request to
4 write new data to a block of the secondary storage device;
5 a checksum mechanism that is configured to calculate a new checksum
6 value from the new data;
7 a retrieving mechanism that is configured to retrieve two previously stored
8 checksum values, including a current checksum value and an old checksum value
9 associated with the block of the secondary storage device, wherein the current
10 checksum value relates to data that is supposed to be currently stored in the block
11 and the old checksum value relates to data that was previously stored in the block,
12 and wherein the current checksum value and the old checksum value are used to
13 determine if the data that is supposed to be currently stored in the block device
14 was actually stored;
15 a checksum writing mechanism that is configured to perform a checksum
16 write operation to a validation device to ~~update~~ write both the current checksum
17 value and the old checksum value to the validation device; and
18 a data writing mechanism that is configured to perform a data write
19 operation to the secondary storage device to write the new data to the block of the
20 secondary storage device.

1 21. (Original) The apparatus of claim 20, wherein if the current checksum
2 value is invalid, which indicates that the current checksum value has not been
3 written to, and the old checksum value is similarly invalid, the checksum writing

4 mechanism is configured to update the current checksum value to be the new
5 checksum value.

1 22. (Original) The apparatus of claim 20, wherein if the current checksum
2 value is valid and the old checksum value is invalid, the checksum writing
3 mechanism is configured to update the old checksum value to be the current
4 checksum value and to update the current checksum value to be the new
5 checksum value.

1 23. (Original) The apparatus of claim 20, wherein if the current checksum
2 value is valid and the old checksum value is valid, the checksum writing
3 mechanism is configured to update the old checksum value to match data that is
4 presently stored in the block on the secondary storage device, and to update the
5 current checksum value to be the new checksum value.

1 24. (Original) The apparatus of claim 23, wherein while updating the old
2 checksum value to match data that is presently stored in the block, the checksum
3 writing mechanism is configured to:
4 determine whether the current checksum value or the old checksum value
5 matches data that is presently stored in the block on the secondary storage device;
6 and to
7 use the matching value to update the old checksum value.

1 25. (Original) The apparatus of claim 20,
2 wherein the receiving mechanism is configured to receive a read request to
3 read a second block of data from the secondary storage device;
4 a data reading mechanism that is configured to perform a data read
5 operation to read the second block of data from the secondary storage device;

6 wherein the checksum mechanism is configured to calculate a checksum
7 value from the second block of data;
8 a checksum reading mechanism that is configured to perform a checksum
9 read operation to read an existing checksum value for the second block of data
10 from the validation device; and
11 a validation mechanism that is configured to,
12 compare the calculated checksum value with the existing
13 checksum value, and to
14 indicate an error condition if the calculated checksum value
15 does not match the existing checksum value.

1 26. (Original) The apparatus of claim 20, wherein the secondary storage
2 device is a disk drive.

1 27. (Original) The apparatus of claim 20, wherein the validation device is
2 separate from the secondary storage device.

1 28. (Original) The apparatus of claim 20, wherein the validation device
2 and the secondary storage device are the same device.